



# Fertility Intentions in Times of Rising Economic Uncertainty: Evidence from Italy from a Gender Perspective

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## Abstract

This study analyses the socio-economic determinants of the short-term fertility plans of Italian women and men living as couples, before and shortly after the onset of the 2007/2008 Great Recession, which may have affected their reproductive plans through a climate of rising economic uncertainty. Using multilevel models, we investigate how fertility intentions are related to the individual characteristics of the respondents and their partners as well as to changes in the economic context. The findings confirm that the Great Recession modified the determinants of short-term fertility intentions differently for women and men. Among the most relevant issues, we outline the importance of couples' working conditions and the contextual labour market indicators.

**Keywords** Fertility intentions · Economic uncertainty · Gender perspective · Italy

## 1 Introduction

Changes in fertility behaviour are among the most intensively studied issues in demographic research. Recent works address fertility intentions, which pertain to the additional children that women and men intend to have, and concern the planning of actions towards a particular goal or a determination to act in a certain way (Morgan 2001). Within the transition from fertility decision-making to fertility behaviour, intentions follow childbearing desires and anticipate concrete behaviour (Billingsley and Ferrarini 2014), reflecting the combined effect of fertility demand and situational constraints on achieving the desired fertility in the hypothesis that having a child is the result of a reasoned decision, based on the evaluation of costs and benefits (Thomson and Brandreth 1995; Ajzen and Klobas 2013).

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Fertility intentions link social, economic, and psychological variables to fertility and therefore depend on both the characteristics of individuals (age, marital status, parity, educational level, relationship networks, and economic situation) and the country's political and economic climate and welfare system (Morgan 2001; Morrissey 2017).

Among the variables negatively influencing fertility intentions, economic insecurity—e.g., insecurity about current and future employment, income and wealth—can play an important role (UNDESA 2008).

A deterioration in the labour market may induce perceptions and expectations of job instability, economic insecurity, awareness of the crisis, and depression, which in turn may affect fertility intentions and fertility (Andersson 2000; Adsera 2004; Philipov et al. 2006; Sobotka et al. 2011; Kreyenfeld et al. 2012) and may constrain the childbearing plans of men and women (Kotowska et al. 2008).

The relationship between fertility behaviour and economic uncertainty increasingly became a subject of interest after the onset of the 2007/2008 financial and economic recession (Sobotka et al. 2011; Pailhé and Solaz 2012; Goldstein et al. 2013; Cazzola et al. 2016; i Arolas 2017).

The aim of our study is to highlight the determinants—at the micro level—of the short-term fertility intentions of women and men living as couples in Italy in the first decade of the 21st Century. We believe, as suggested by previous research (Spéder and Kapitány 2009; Begall and Mills 2011; Berrington and Pattaro 2013; Cavalli and Koblas 2013; Vignoli et al. 2013; Spéder and Kapitány 2014), that a gender perspective is important, as male and female intentions are differently correlated to actual fertility.

Focusing on partnered individuals, we use data from the 2003 and 2009 Italian Multipurpose Survey – Family and Social Subjects.<sup>1</sup> The period considered marks the onset of the 2007/2008 Great Recession. Although the data do not reveal a decline in intentions of having a child in Italy between the two surveys—as emerged in previous research for many European countries in the same period (Testa and Basten 2014; Palumbo and Sironi 2016)—we expect that the crisis might have modified the determinants of women's and men's reproductive plans because of the climate of rising economic uncertainty. We are aware that the survey conducted in December 2009 might be somewhat close to the onset of the crisis to fully indicate whether the recent economic deterioration would lead to long-term modifications in fertility behaviour. Nevertheless, the survey was conducted after a period of rising uncertainty and labour market deterioration (rising unemployment rates, juvenile unemployment and inactivity rates) (Di Quirico 2010; Coletto 2010). The media gave great emphasis to the global crisis right from its beginning in 2007, in a process of globalisation of risks recalling that proposed by Beck (1992), where individuals were able to subjectively assess the gravity of the situation in which they found themselves. As individuals are “hardwired to prioritize negative over positive information” (Soroka 2014: 101), and pay more attention and react more strongly to negative than to positive inputs, by the end of 2009 Italians already had a clear perception of economic crisis.

Furthermore, utilizing fertility data from the period of 2001–2010 and unemployment data from the period of 2000–2010, Goldstein et al. (2013) also found that countries hard hit by the recession already showed a decline in total fertility.

Using multilevel models, we investigate if and how the determinants of childbearing intentions change or assume different importance before and shortly after the beginning

<sup>1</sup> A variant of the gender and generation survey (GGS). Currently, the 2009 Survey is the last available Survey for Italy in the GGS program.

of the Great Recession, thereby contributing to the literature on the relationship between economic uncertainty and fertility. We address two central research questions from a gender perspective. Firstly, what are the effects of individual and contextual characteristics on fertility intentions before and after the onset of the financial and economic crisis? And secondly, does the set of determinants of reproductive behaviours change in the presence of economic uncertainty? In fact, the contextual environment may influence intentions by affecting the background factors measured at the individual level.

## 2 Theoretical Background

Some studies have addressed the link between economic uncertainty and childbearing intentions (Berninger et al. 2011; Fahlén 2013), although this issue has still not been sufficiently explored (Testa and Basten 2014; Fahlén and Oláh 2015). However, theories on fertility can support the application of theories of intentions (Philipov 2011).

Uncertainty can be expressed in economic, social, and personal dimensions (Fiori et al. 2013). When the economic dimension is considered, the theory is rooted in the conceptual structure of Becker's microeconomic model of fertility (Becker 1960; 1991), where childbearing and the associated opportunity costs are strictly connected to the potential wages of the parents. Assuming that fertility behaves in a procyclical way with respect to economic context, Becker's approach predicts a negative effect of unemployment on men's fertility behaviour due to the loss of income (the income effect), while female unemployment could be positively associated with fertility behaviour through a reduction in the opportunity cost of childbirth, providing time for childbearing and child care (the substitution effect). For women, the overall impact is thus more ambiguous, because it depends on whether the income or substitution effect prevails.

Easterlin (1976) enriched Becker's theory by introducing young adults' reluctance to have a family until their material aspirations have been reached. Such aspirations mean that an economic recession could cause a delay in marriage and childbearing. More recently, Bernhardt (1993) introduced the effects of institutional arrangements, arguing that unemployment benefits may moderate the income effect, while maternity benefits reduce the opportunity cost of childbearing, as they partially compensate for wage loss.

The question concerning fertility and recession is, fundamentally, whether the relationship is pro- or counter-cyclical. A counter-cyclical relationship was found by Butz and Ward (1979) for the United States, where temporary periods of unemployment constituted a good time for childbearing for women as the opportunity costs were lower.

Recent research usually indicates that economic security is a precondition for having children for both men and women (Fahlén and Oláh 2015); that is, fertility usually has a procyclical relationship with economic conditions. Greater economic resources allow people to plan (and raise) larger families (Rinesi et al. 2011), while situations of economic uncertainty, such as periods of unemployment, may lead people to postpone childbearing until they can find a secure job (Mills et al. 2008). Economic uncertainty can induce a short-term reduction in fertility, often due to the delaying of decisions to have a(n additional) child, which can be picked up again when the economy recovers (Brewster and Rindfuss 2000; De La Rica and Iza 2005).

Moreover, a recent body of research on the determinants of fertility intentions suggests that they depend not only on demographic and socio-economic, but also on gender-related factors (Begall and Mills 2011; Berrington and Pattaro 2013; Cavalli and Koblas 2013;

Vignoli et al. 2013; Spéder and Kapitány 2014). Economic and institutional context, as well as gender roles within the family, may impact the childbearing intentions of women and men differently, since motherhood and fatherhood have different consequences for women and men (Neyer et al. 2013).

A further interpretation of the link between intentions and behaviour is provided by the Theory of Planned Behaviour (TPB) (Ajzen 1991), which states that intentions are a driving force for action. According to this theory, intentions derive from the combination of (1) attitudes towards the behaviour in question (i.e. having a (nother) birth); (2) subjective (i.e., internalized) norms about the behaviour; and (3) the extent to which the behaviour is perceived to be subject to control. The TPB has been adapted to the analysis of fertility decision-making by several demographers (Billari et al. 2009; Ajzen and Klobas 2013; Philipov et al. 2015).<sup>2</sup>

To develop a complete approach to fertility intentions, it is then important to include several levels of analysis: the individual characteristics and joint resources of the two partners, as well as the socio-economic climate and the institutional family policies regarding the reconciliation of work and family (Billingsley and Ferrarini 2014). In fact, fertility intentions reflect both internal and external pressures and influences. It is important to observe them in relation to macro-level conditions that can lead to changes in individual perception of effective options and constraints with regard to present situation and future prospects, inducing growing concern for the future, and influence people's short-term childbearing intentions (Fahlén and Oláh 2015; Hanappi et al. 2017). For example, during an economic crisis, even employees in stable jobs with permanent employment contracts are still potentially at risk of redundancy due to possible company bankruptcy, because economic recessions increase the individual likelihood of employment instability and insecurity (de Lange et al. 2014). In addition to unemployment, other contextual indicators also reflect aspects of economic uncertainty that have become common in many European countries, such as temporary contracts, part-time work, and other flexible forms of work<sup>3</sup> which deviate from 'standard' employment contracts. The proportion of the EU-28 workforce in the 20–64 years age-group reporting that their main job was part-time increased slowly but steadily from 14.9% in 2002 to 19.0% in 2015 (Eurostat 2019).

Macro and micro-level insecurities might reinforce each other, as individuals with an insecure employment position could feel discouraged from making long-term family commitments if economic prospects are poor. As many scholars affirm (Giddens 1990; Beck 1992; Beck and Beck-Gernsheim 2002; Rijken and Knijn 2009), in a modern society increasingly preoccupied with the future, one major problem is the importance of making choices (i.e. choices about the family and parenthood).

<sup>2</sup> Unfortunately, the 2009 survey does not allow us to analyse fertility intentions in the framework of the TPB.

<sup>3</sup> This category encompasses several contractual arrangements. Among them: 'very short' fixed-term work of less than 6 months; 'very short' part-time work of less than 10 h a week; non-contract work; zero hours or on-call work; and work from home (Eurostat 2019; Broughton et al. 2010).

### 3 Previous Research

The research on economic uncertainty and childbearing intentions was relatively limited until quite recently and conclusions vary depending on gender and socioeconomic characteristics. Generally, researchers agree that uncertainty adversely affects both fertility (Adsera 2011) and fertility intentions (Testa and Basten 2014; Bono et al. 2015).

The roles of financial security (including employment status), educational attainment (assumed as an indicator of earning potential) and housing conditions are often included in analyses of fertility intentions (Thomson 1997; Berrington 2004; Régnier-Loilier and Vignoli 2011; Testa 2014).

Findings from several Western and Eastern European countries confirm that individuals with “better” employment are more oriented towards childbearing, although the direct relationship between job quality and fertility intentions may vary between men and women and among countries (Neyer et al. 2013). In Switzerland, perceived job instability negatively affects the intention of having a first child for women (Hanappi et al. 2016); in particular, a rise in employment uncertainty facilitates a downward revision of reproductive decisions among highly educated Swiss men and women (Hanappi et al. 2017). Less favourable socioeconomic situations (educational level, occupational status) appear to delay the realisation of intentions for both genders in France and Italy (Régnier-Loilier and Vignoli 2011).

Another important aspect is the couple’s employment status. Dual-earner couples generally display higher fertility intentions than one-earner couples, because of their higher levels of economic resources (Toulemon and Testa (2005) for France; Salvini et al. (2009) for Italy).

The number of hours a person works also has been related to childbearing plans and fertility (Testa and Basten 2014) but results from micro-level analysis are sometimes conflicting. As Del Boca (2002) states, the availability of part-time jobs can positively influence the decisions to work and have a child, but part-time jobs are often precarious and frequently associated with low wages and low levels of social security (Hanappi et al. 2017; Charles 2011). For example, part-time work is significantly negatively connected to the fertility intentions of highly educated childless men and women in some European countries (Buber et al. 2012), because of the risk of holding precarious positions in the labour market, often associated with limited financial resources.

Housing conditions has been proposed as a proxy of wealth: people living in a luxury house have higher fertility levels (Kulu and Vikat 2007).

Finally, the availability of support from individuals’ social network-social capital has been considered an important factor which may weaken the effect of economic insecurity on fertility (Philipov et al. (2006) for Bulgaria and Hungary; Bühler and Frątczak (2007) for Poland). Likewise, public childcare provision for children has been discussed by many authors as a determinant of fertility decisions.<sup>4</sup> As validated for OECD countries, a lack of both good quality formal childcare provision and state support will likely limit female chances to stay in employment, thus reducing their number of children (Fagnani 2008). Investments in education and childcare facilities have been identified as factors which

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<sup>4</sup> Both the 2003 and 2009 Italian Multipurpose Surveys ask if children (0–13 years) are currently registered at nursery school or at school. Furthermore, the 2003 questionnaire includes two questions referred to children aged 0–5 years on the causes of their enrolling or not in pre-primary education. Unfortunately, the lack of this information in 2009 did not allow us to include childcare facilities in our analysis.

contribute to a higher birth rate (D'Addio and Mira d'Ercole (2005a) for France and Scandinavian countries; Fine-Davis (2016) for Ireland).

At the macro level, the rise of unemployment or marginal employment arrangements (i.e., the rise of part-time working) emerges as an indicator of the impact of an economic crisis, which can influence the reproductive behaviour of women and men. A negative relationship between the level of unemployment and the total fertility rate (TFR) has been found in some OECD countries (Adsera 2004; D'Addio and Mira d'Ercole 2005b) and in the northern and central Italian regions (Cazzola et al. 2016). Perceived economic uncertainty in terms of unemployment risks also has an impact on short-term childbearing intentions, mainly among European men who may be (or are considered) the main providers in the household (Fahlén and Oláh 2015).

These findings confirm the hypothesis that when people perceive economic uncertainty and are afraid that their income may decrease, they may abandon the idea of childbearing, which could negatively influence their economic well-being.

GDP trends also often show a positive correlation with both trends in fertility rates (Sobotka et al. 2011 on OECD countries during 1980–2008) and short-term fertility intentions (Testa 2010 on the EU 27 plus Turkey and Croatia in 2006).

## 4 Hypotheses

Our analysis starts from the assumption that individual characteristics, couple characteristics and changes in socioeconomic contextual factors influence the individual perception of security or uncertainty, which in turn affects childbearing intentions.

1. As reported by Palumbo and Sironi (2016), rising economic uncertainty may modify the determinants (at both the micro and the macro level) of short-term intentions to have a child;

**H1** The set of determinants of fertility intentions may change after the onset of the financial and economic crisis.

2. Our exploratory analyses confirmed that some individual and contextual variables may not operate in the same way for male and female fertility intentions, as already pointed out by many authors (Berrington 2004; Cavalli and Klobas 2013; Vignoli et al. 2013; Spèder and Kapitány 2014; Fiori et al. 2013; Mills and Blossfeld 2005);

**H2** The determinants of fertility intentions are gender-differentiated.

3. Italy retains the dominant male-breadwinner family model, along with public policies that favour one-earner couples, with the consequent difficulties for women in combining work and parenthood (Mills et al. 2008; Rinesi et al. 2011; Fiori et al. 2013; Pinnelli et al. 2007). In this context of traditional gender roles, occupational status may repre-

sent a main determinant of fertility intentions, especially among men, as predicted by microeconomic theory;

**H3** Working conditions represent a stronger predictor of fertility intentions among men than women.

4. Education is a personal resource that can signal potential earnings and good long-term economic prospects, and can positively influence fertility intentions, as found by many authors (as Mills et al. (2008) and Pinnelli and Fiori (2008) reported for Italy and Testa (2014) for European countries).

Testa and Stephany (2017), using 86 pieces of research covering 13 European countries (including Italy) published between 1990 and 2011, showed that in Western, Northern and Southern countries highly educated women and men are more likely than their less educated counterparts to say they intend to have another child. They support the thesis that the former generally have more resources for outsourcing childcare than the latter.

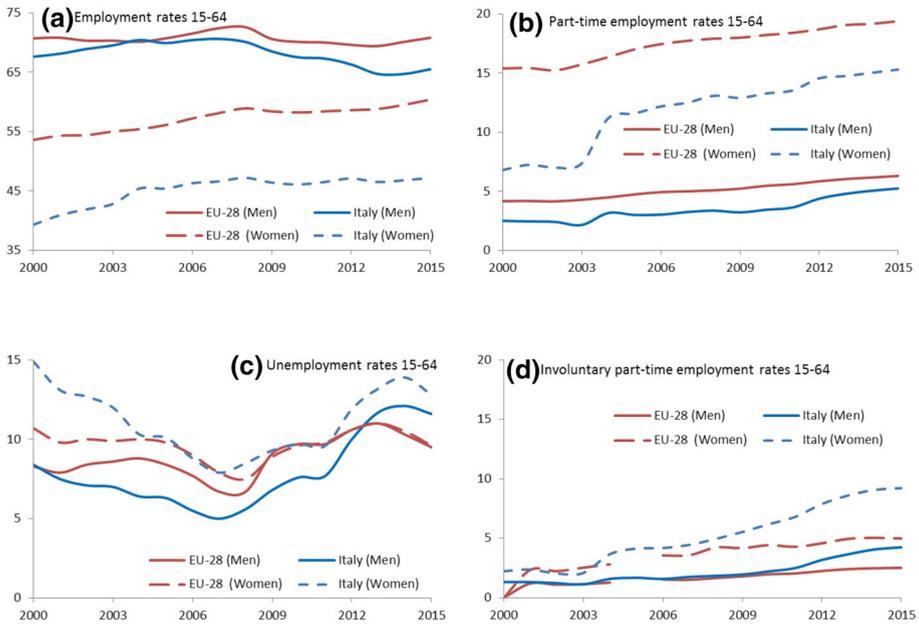
**H4** Highly educated people show higher fertility intentions.

4. The availability of support from the individual's social network may represent an important intermediary factor between the individual and the societal response to insecurity (Fiori et al. 2013). Unpaid external supports may lower the costs of having children and could play a positive role in reproductive choices (Dalla Zuanna and Micheli 2004; Balbo and Mills 2011);

**H5** The availability of unpaid external supports is associated with higher fertility intentions.

6. Economic contextual conditions may exert a significant influence on short-term fertility intentions. A worsening in the economic contextual conditions induces perceptions and expectations of economic insecurity, adversely influencing the childbearing plans of men and women (Testa and Basten 2014). At the macro-level, we expect significant effects of changes in GDP (Billari et al. 2009) and labour market indicators;

**H6** Labour market instability adversely influences the fertility intentions of Italian women and men, while the relationship between GDP and fertility intentions is procyclical.



**Fig. 1** Employment rates, unemployment rates, part-time employment rates, and involuntary part-time employment rates: Italy and the EU-28 (Part-time employment and involuntary part-time employment rates were obtained on the basis of employment rates and part-time employment and involuntary part-time employment percentages.). *Source:* OECD [2017]

## 5 The Italian setting

Italy, like other European countries, has faced many dramatic changes in various sociodemographic fields in the last few decades. After the baby boom of the mid-1960s, the TFR steadily declined, reaching rates below 1.3 children per woman over the 1993–2003 period. Subsequently, a small recovery was observed up to 2010 (1.46 children per woman), whereas in the most recent years the TFR has levelled out: in 2016, the rate fell to 1.34. However, the number of children desired by Italian couples is still near the replacement level (TFR of 2.1).

Italian fertility patterns have been characterised by regional differences, influenced by both distinct reproductive models and differentiated distribution of foreign-born populations across the country (Caltabiano et al. 2009).

Since the last few decades of the 20th Century, the country's educational level has increased considerably, with achievement of gender balance at the highest levels of education (Fiori 2011). Women's educational achievements have been followed by greater participation in the labour market, although the employment rate of Italian women (age 15–64) has remained among the lowest in Europe (Fig. 1a). The gender gap in both employment and unemployment rates in Italy is always higher than the corresponding value in the EU-28 (OECD 2017); conversely, male unemployment rates in Italy are generally somewhat below the EU-28 average (Fig. 1c).

Temporary contracts, part-time work, and flexible jobs—common in many European countries—increased in Italy (Fig. 1b) after the introduction of the 1997 Treu and 2003

Biagi reform measures.<sup>5</sup> The Treu law increased labour market flexibility, mainly by introducing temporary contracts and providing incentives for part-time work. The Biagi reform further deregulated the use of atypical work arrangements, such as temporary agency work (staff-leasing) and part-time work, and introduced new forms of atypical work arrangements such as on-call jobs, job sharing and occasional work (Schindler 2009). These institutional changes have greatly contributed to the spread of temporary employment in Italy (OECD 2009; Cappellari et al. 2012).

Part-time jobs in Italy are always less widespread compared with other European countries (Fig. 1b); however their increasing trend mostly explains the higher growth rates of female employment in Italy with respect to other countries (Del Boca and Giraldo 2013).

Wide differences characterize regional labour markets in Italy. In the early twenty-first century unemployment and long-term unemployment decreased in all regions. After the 2007/2008 economic crisis, unemployment increased especially in the Central and Northern regions, while long-term unemployment consistently grew all over the country. Part-time work increased everywhere in the first decade of the 2000s, though more markedly in the Southern regions. While GDP was growing in all regions before the crisis, it fell everywhere immediately after. Although the crisis has affected the whole country, the Southern regions appeared to be at a disadvantage with respect to those of the center-north.

Involuntary part-time employment is increasing in Italy more than in the EU-28 (Fig. 1d). This phenomenon, which affects Italian men and women alike, grew exponentially (especially for women) following the 2007/2008 economic crisis.

In Italy, state welfare policy is primarily centred on the family and on the male breadwinner model. This Southern Model welfare regime is deeply influenced by the conception that the family is the economic and caregiving unit and that the state should intervene only when families are unable to satisfy their members' needs (Ferrera 1996; Naldini 2003; Fiori et al. 2013).

In the 21st Century, the level of public social expenditure in Italy has varied between 25 and 30% of GDP, which is in line with other Western European countries (OECD 2016), but in the context of social services, Italy has a serious shortfall in public childcare provision for children under 3 years of age, which varies greatly from region to region (Del Boca and Giraldo 2013); enrolment rate reaches 5% for the whole country in 2018, in contrast to OECD average which is higher than 30%. On the contrary, pre-primary schools for children from 3 to 5 years of age, mainly provided by the public sector (72% of children enrolled in public schools) are more widespread throughout the nation. The pre-primary school enrolment rate is about 94%, compared to 87% on average across OECD countries (OECD 2019).

## 6 Data and Methods

### 6.1 The Sample

This study is based on the Italian Multipurpose Survey–Family and Social Subjects, conducted every 5 years since 1998 by the Italian national institute of statistics (ISTAT). The

<sup>5</sup> Law no. 196/1997 (the so called “Treu-Package”); Law no. 30/2003 (the so called “Biagi Law”).

survey constitutes a key source of statistics on family structures and the social characteristics of the family in Italy.<sup>6</sup>

To deepen our investigation of the components of fertility attitudes, we considered two independent surveys conducted in 2003 and 2009, in order to compare the explanatory power of several socioeconomic variables before and after the recent economic downturn. These surveys do not include time-dependent variables.

The 2003 survey, conducted in November, was based on 14,323 families (49,541 people), whereas in December 2009 the sample included 17,788 families (43,850 people). When couples were directly interviewed, each member responded separately.

Starting from the assumption that in Italy childbearing decisions are realistic only when taken at the couple level, we considered Italian men and women ages 18–45 living as couples (married or unmarried), as here fertility intentions are not considered as the long-run or ideal target, but rather as real-life prospects in the short term for cohabiting or married people.

After these reductions, the 2003 and 2009 samples consisted of 9486 and 7437 individuals respectively. A few sociodemographic variables collected in 2003 were absent in 2009 (e.g., lifestyle preferences, religious practices, some information about children enrolment in childcare and pre-school, etc.), but the core questionnaires were entirely comparable. In addition to data from Italian Multipurpose Survey, we also used regional data on GDP and labour market indicators. Data on GDP were derived from ISTAT, while data on labour market were derived from OECD.

## 6.2 Dependent Variable

Fertility intentions were collected by the survey question, “Do you intend having a child or another child in the next 3 years?”. It was assessed using four categories: definitely not; probably not; probably yes; and definitely yes. The first two categories were considered as “no” and the second two as “yes”. The dependent variable takes a value of one if the respondent intends to have a child in the next 3 years, and zero otherwise.

In 2003, 32.0% of respondents (35.8% of men and 29.1% of women) declared their intention of having a child or another child within three years, while in 2009, this proportion was 35.0% (38.6% and 32.1%, respectively)<sup>7</sup> (Tables 2, 3).

The substantial stability of fertility intentions during the Great Recession is common to many European countries (Testa and Basten 2014; Palumbo and Sironi 2016). One possible explanation is the existence of a structural effect: i.e., in the case of postponement of fertility, because of the recession, people who had previously delayed the decision to have children might have reported a positive fertility intention. Though the share of respondents declaring a positive intention did not change after the onset of the crisis, we expect that changes in the socioeconomic conditions did influence the determinants of their short-term fertility intentions.

## 6.3 Explanatory Variables

The model includes control covariates that account for the main demographic and socioeconomic characteristics of the individuals and couples (Tables 2 and 3). Among the

<sup>6</sup> The questionnaires provide insight into various aspects of everyday life (see <https://www.istat.it/it/archivio/81546>).

<sup>7</sup> Note that approximately 95% of the couples in the two samples substantially agreed with respect to fertility intentions.

demographic characteristics, we considered the *age* of the respondent and his/her *partnership status* (cohabitant or married). Moreover, as already proposed in the literature (Mills et al. 2008; Hanappi et al. 2017; Hanappi and Buber-Ennsner 2017), we introduced the covariate *number of living children*<sup>8</sup>(0, 1, 2, 3+) to control for the effect of parity on the dependent variable.

Among the socioeconomic variables, we included *educational level*, represented by: low (up to lower secondary school), intermediate (upper secondary school), and high (college, graduates and above).

The *employment status of the respondent* variable can be considered as a proxy of his/her economic status. In agreement with Testa and Basten (2014), who stated that considering employment/unemployment as a binary variable may be insufficient, we considered the impact of part-time and full-time employment on fertility intentions, as in previous analyses of women's fertility intentions (Engelhardt and Prskawetz (2004) and Begall and Mills (2011) for European and developed countries. This variable was recoded as: not working, part-time work,<sup>9</sup> and full-time work. It would have been ideal to consider a variable concerning job certainty/uncertainty, such as job stability (e.g., temporary or permanent employment), but the data do not provide complete information, since in both surveys approximately 25% of employees did not respond to the question about the duration of their job.

The partners' employment status allows us to define the *employment status of the couple*, which was recoded as no workers, one worker, and two workers.

The *type of house*, an evaluation provided by the surveyors, may represent, for Italy, an indicator of the couple's economic prosperity. Mulder (2006), who analysed the connections between home ownership and family formation in 27 Western countries, stressed that Spain, Italy and Greece are the three countries with a high percentage of homeowners and the lowest fertility. In Italy, owner-occupied housing is the norm for couples and families. Indeed, approximately 80% of Italian people live in a self-owned house (ISTAT 2016), often small and in need of renovation. Moreover, our data do not allow us to ascertain if the couple pays a mortgage, which, like renting, may lead to liquidity constraints and seems to compete with the desire to have a child (Vignoli et al. 2013). Therefore, the quality of housing, and not home ownership, can provide a reliable proxy for assessing the household's socioeconomic status.

The six surveys' house types followed the classification of the Italian cadastral public register and were recoded as: modest house (economic or council house, country house, and unfit house), normal house (civil house), and luxury house (detached house or cottage, luxury house).

Finally, we considered a variable that measures the (unpaid) external support that the family had benefited from in the four weeks before the survey, provided by people (relatives or not) who did not live with the surveyed people.

External support can represent a proxy for a supportive network on which people can rely when planning a birth. Excluding the most occasional forms of support, we only considered economic support, support in caring for and assisting with children, support with domestic activities (including activities that do not take place in the surveyed house), and

<sup>8</sup> We did not separately run models for people with and without children (approximately 18% in 2003 and 17% in 2009, for both genders, Tables 2 and 3), since—due to the low number of observations—this would have prevented the reliable estimation of parameters by multilevel models.

<sup>9</sup> In line with the OECD definition, part-time is work that involves fewer than 30 h per week. In the 2003 and 2009 surveys, the distinction between full-time and part-time work was based on a spontaneous response by the respondent.

free consumer goods (food, clothes). We included both private monetary and non-monetary (i.e., in-kind) exchanges.<sup>10</sup>

In order to consider both the quality and the quantity of external support, we computed the *number of external supports received* declared by individuals, recoded as: no support, one support, and two or more supports. In Italy, the combination of a weak welfare system and strong ties to family members and relatives produces a situation where supportive social networks may be a crucial factor in influencing individuals' fertility intentions (Dalla Zuanna and Micheli 2004; Balbo and Mills 2011) and their realisation.

Moreover, to capture the influence of the economic environment on fertility intentions, we considered some regional indicators (Table 4) calculated on the whole population, on the assumption that individual perception of socioeconomic condition is affected by the general situation of society as a whole; for example, an increase in the total unemployment rate—regardless of age and gender—can increase individual insecurity about future job stability, as already stated in Goldstein et al. (2013).

In this analysis, level 2 variables indicate 19 Italian regions<sup>11</sup> (all NUTS2, as used by Eurostat and the European Union excluding Valle d'Aosta).<sup>12</sup> In fact, the economic situation of the region or country is a central contextual variable recently identified as a major leading factor driving the individual's childbearing choices (Testa 2010). Among the regional-level covariates, we considered three indicators that represent labour market status (unemployment and long-term unemployment rates, and part-time incidence) and GDP.<sup>13</sup>

The *change in unemployment rate*, the *change in long-term unemployment incidence rate*<sup>14</sup> and the *change in GDP* represent the percentage changes in the indicators between two time periods: 2001–2003 and 2007–2009. According to Sobotka et al. (2011) and Pailhé and Solaz (2012), a 2-year time gap may represent a sufficient amount of time to fully capture respondents' reaction to changing economic conditions.

The *part-time employment incidence* in the years of the surveys represents people who are employed part-time as a proportion of all employed people, which increased in particular for women following the 2003 Biagi reform<sup>15</sup> and after the recent economic downturn (Fig. 1b, d). The part-time employment incidence variable refers to the analysed years: as data were not complete for all the regions, variations could not be computed. Generally,

<sup>10</sup> The questionnaire includes a set of external supports: Economic support, Health benefits, Support in caring for and assisting with adults, Support in caring for and assisting with children, Support with domestic activities, Company, assistance and company, Support in carrying out bureaucratic activities, Help in carrying out extra-domestic work, Education support, Free consumer goods, Other.

<sup>11</sup> The choice of regions as second level units stems from the strong Italian regional culture that identifies the regions as important cultural and economic decisional units. Indeed, under the Italian Constitution, each region is an autonomous entity with clearly defined powers (e.g. in education, labour market, welfare policies, etc.). Although possibly heterogeneous within them, they entail a strong identity and sense of belonging, and also represent the area's tradition and economic orientation.

<sup>12</sup> Although 19 s level units are generally considered sufficient (Goldstein 2011; Hox et al. 2017), to improve the estimates' reliability and to overcome the possible drawbacks stemming from a low number of level 2 units, we employed a bootstrap procedure which allows us to obtain a more robust standard error and to relax the normality assumption of the group-level effect (Carpenter et al. 1999; Cameron and Miller 2015). The procedure was implemented through the R package "lme4".

<sup>13</sup> The data on GDP were derived from ISTAT (2017), while data on the labour market were derived from OECD (2017). The 'part-time employment incidence' variable refers to the analysed years: as data were not complete for all the regions, we could not compute variations.

<sup>14</sup> The unemployment rate and the long-term unemployment rate are not necessarily related; we first performed a correlation analysis in order to assess the possible presence of multicollinearity which would have led to unreliable estimates. Our analysis showed that there is no high correlation among the contextual variables considered.

<sup>15</sup> See note 4.

part-time work is associated with lower income; for this reason, the wider adoption of this type of work could generate a feeling of economic uncertainty.

### 6.4 The Model

To account for the dichotomous nature of the dependent variable—the individual fertility intention—we employed a multilevel logit regression model (Goldstein 2011; Hox et al. 2017, which allowed us to investigate how people interact with their social backgrounds and geographical context.

This approach enables us to exploit the hierarchical structure of the data, since it considers both micro- and macro-level effects by nesting coupled individuals into assessable, context-level units and follows the sampling scheme adopted in the survey. We employed this model to assess the effect of regional economic factors on respondents’ fertility intentions. From a statistical viewpoint, the assumption of the independence of observations, required by traditional (single-level) statistical models, was violated, since the observations were clustered rather than independent.

Using clustered information, multilevel models provided correct standard errors, confidence intervals (CI), and significance tests, proving that they were suitable for our analysis purposes.

The dependent variable is a dichotomous variable,  $y_{ij}$ , indicating whether or not individual  $i$  in region  $j$  intends to have a child in the next 3 years. In this context,  $y_{ij}$  follows a binomial distribution [ $y_{ij} \sim \text{Binomial}(1, p_{ij})$ ], where  $p_{ij}$  is the probability that subject  $i$  from region  $j$  intends to have a child in the next 3 years.

The individual’s logit ( $P(Y_{ij} = 1)$ ) is expressed as a function of individual and regional characteristics; that is, it can be extended to consider  $P$  ( $p = 1, \dots, P$ ) individual covariates ( $x_{pij}$ ) and  $Q$  ( $q = 1, \dots, Q$ ) regional variables ( $z_{qj}$ ) as follows.

Level 1-individual characteristics:

$$\log\left(\frac{p_{ij}}{1 - p_{ij}}\right) = \text{logit}(P(Y_{ij} = 1)) = \beta_{0j} + \sum_{p=1}^P \beta_{pj} x_{pij} \tag{1}$$

Level 2-regional indicators:

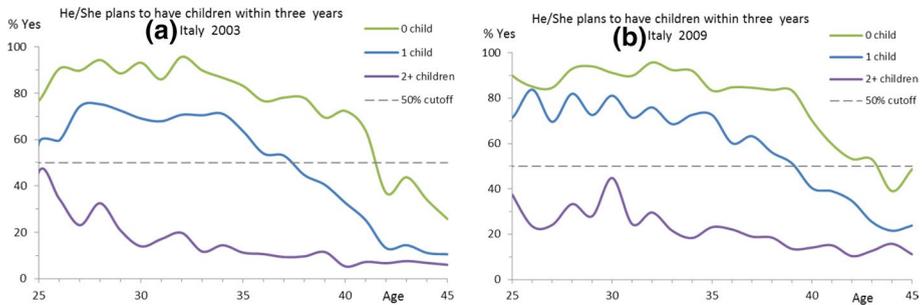
$$\beta_{0j} = \gamma_{00} + \sum_{q=1}^Q \beta_{0q} z_{qj} + \mu_{0j} \quad \beta_{pj} = \gamma_{p0} + \sum_{q=1}^Q \beta_{pq} z_{qj} \tag{2}$$

Thus, the combined model is as follows:

$$\log\left(\frac{p_{ij}}{1 - p_{ij}}\right) = \text{logit}(P(Y_{ij} = 1)) = \gamma_{00} + \sum_{p=1}^P \beta_{pj} x_{pij} + \sum_{q=1}^Q \beta_{0q} z_{qj} + \mu_{0j} \tag{3}$$

where  $\beta_{pj}$  represents the regression coefficient (slope) of the  $p$ -th individual characteristic in region  $j$ , which is allowed to randomly vary across regions by adding the  $Q$  regional variables.

In the context of logistic regression, there is a potential problem of interpretability and comparability of estimated parameters in different models (Allison 1999; Mood 2010). This



**Fig. 2** Fertility intentions by age and parity (both genders jointly considered—univariate results) *Source:* Authors' elaboration based on the Italian Multipurpose Survey – Family and Social Subjects data (Istat)

problem stems from the difficulty in handling the unobserved heterogeneity in different samples and/or models, which may lead to considerable bias and misleading conclusions in interpreting estimation results. For this reason, we present the results in the form of average marginal effects (AME), which express the average effect of the corresponding variable on the probability of obtaining a positive fertility intention. This measurement enables us to compare the estimated effects across different groups and models, which is suitable for our research questions concerning the change in behaviour across genders and years.

In accordance with previous research (Mills and Blossfeld 2005; Fiori et al. 2013) and H2, in our analysis we modelled women's and men's childbearing intentions separately, in order to take a gender-specific approach.

## 7 Results

The descriptive results (Tables 2, 3) provide evidence of similarities and differences across genders and years. As expected, fertility intentions mostly varied by age and number of living children, for both surveys and both genders (Fig. 2).

Positive intentions were greater than 50% for married or cohabiting men and women with no children or one child until the ages of 37 and 41, respectively, in 2003; in 2009, the 50% cut-off point was at 39 and 43 years, respectively.<sup>16</sup> In both surveys, fertility intentions rapidly fell below 25% for respondents with two or more children, although still of reproductive age. In all the models, these two variables represent the most important determinants of reproductive intentions.

As a measure of overall goodness of fit, we consider the discrimination capacity of the model using the receiver operating characteristic (ROC) curve, which compares the proportions of correctly and incorrectly classified predictions over a wide range of possible threshold levels. For the subsamples of men and women, the values of the area under the ROC curve vary from 0.87 to 0.90 (Table 1), showing that the fitted models had good classification ability.

The effects of the individual control variables (Table 1) mostly supported the results achieved in previous studies on fertility intentions and also indicated interesting new considerations.

<sup>16</sup> Ages 18–24 are excluded from Fig. 2 due to the low number of observations. Similarly, the observed pronounced fluctuations in the graph are due to the small size of subgroups by age and parity.

**Table 1** AME values by gender and survey

| Variable  | 2003       |            | 2009       |            |
|---|------------|------------|------------|------------|
|   | Men        | Women      | Men        | Women      |
| <i>Individual level</i>                                 |            |            |            |            |
| Age   | -0.0182*** | -0.0222*** | -0.0195*** | -0.0213*** |
| Number of living children (ref.: no children)           |            |            |            |            |
| One   | -0.1540*** | -0.1546*** | -0.1249*** | -0.1451*** |
| Two   | -0.4601*** | -0.4444*** | -0.3703*** | -0.3983*** |
| Three or more   | -0.4562*** | -0.4938*** | -0.4108*** | -0.4522*** |
| Partnership status (ref.: cohabitants)                  | 0.0229     | 0.0349*    | 0.0409**   | 0.0547***  |
| Educational level (ref.: low)                           |            |            |            |            |
| Intermediate  | 0.0174     | 0.0313***  | 0.0390***  | 0.0183     |
| High  | 0.0546***  | 0.0753***  | 0.1062***  | 0.0660***  |
| Employment status of the respondent (ref.: not working) |            |            |            |            |
| Part-time work  | 0.0060     | 0.0180     | -0.0587    | -0.0342    |
| Full-time work  | 0.0230     | 0.0342     | -0.0443    | -0.0096    |
| Employment status of the couple (ref.: no workers)      |            |            |            |            |
| One worker  | 0.0370     | -0.0013    | 0.0705*    | 0.0192     |
| Two workers   | 0.0257     | 0.0122     | 0.1008**   | 0.0463     |
| Type of house (ref.: modest)                            |            |            |            |            |
| Normal  | 0.0242     | 0.0108     | 0.0069     | 0.0194     |
| Luxury  | 0.0100     | 0.0094     | 0.0008     | 0.0380*    |
| Number of external supports received (ref.: no support) |            |            |            |            |
| One support   | 0.0235     | -0.0239*   | 0.0037     | 0.0008     |
| Two or more supports                                    | 0.0593**   | 0.0317     | 0.0228     | 0.0297     |

Table 1 (continued)

| Variable                               | 2003       |            | 2009      |           |
|--|------------|------------|-----------|-----------|
|  | Men        | Women      | Men       | Women     |
| <i>Regional level</i>                  |            |            |           |           |
| Changes in GDP                         | 0.0001     | 0.0125***  | 0.0020    | 0.0090*   |
| Changes in unemployment rate           | -0.0007    | -0.0007    | -0.0009** | -0.0009** |
| Changes in long-term unemployment rate | -0.0014**  | -0.0013**  | -0.0011   | -0.0008   |
| Part-time employment incidence         | -0.0147*** | -0.0153*** | -0.0103** | -0.0075** |
| ROC values                             | 0,87       | 0,90       | 0,87      | 0,89      |

Authors' elaboration based on the Italian Multipurpose Survey–Family and Social Subjects data (Istat);  $p$  value significant to the \*\*\* 1%, \*\* 5%, and \* 10% level. The  $p$  values are obtained after a bootstrap procedure with  $B = 10,000$  replications

As expected, male and female fertility intentions were always strongly and negatively related to age and parity. For both genders and surveys, the propensity to have a child fell drastically for respondents who already had at least two children, in line with the two-child family preference in Italy.

The *educational level* showed a clear pattern. As expected, positive, significant child-bearing plans always emerged among respondents who had attained higher education. The highest level of education became more important for men after the onset of the crisis: the AME for the highest level, which was always significant, almost doubled (from 0.0546 to 0.1062) in 2009 with respect to 2003. The significance of the estimated coefficients for people with an intermediate level of education, although positive in all the models, changed between the two surveys in a gender-differentiated way. The intermediate level became significant for males in 2009 with respect to lower levels of education, although the highest education always had the greatest impact; conversely, for women, the intermediate level lost its significance in 2009.

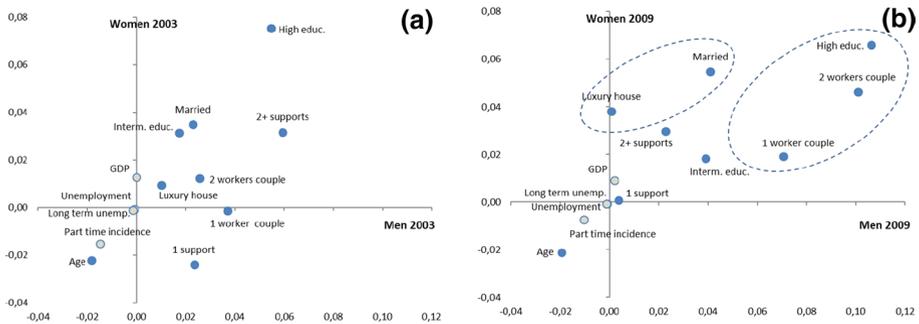
The *partnership status* variable also showed gender-differentiated changes from 2003 to 2009. AME values showed an evident, significant effect on female intentions in both years, highlighting higher fertility plans for married women than for those who cohabit, with a stronger effect during the crisis. In 2009, being married also significantly encouraged the reproductive plans of men.

The variables related to working conditions represent one of the most important aspects in our analysis, but the results only partially agreed with our hypotheses. *Employment status of the respondent* (part/full-time vs not working) never had an effect on fertility plans, suggesting that—in a condition of rising uncertainty—the working conditions of couples prevail over individual status. Indeed the *employment status of the couple* variable showed both a gendered pattern and a different relevance: while in 2003, no significant association with the dependent variable emerged for either gender, in 2009 a significant and positive effect emerged for men, in particular when both members had a job.

Our expectations—supported by the recent literature—regarding the positive impact of *the number of external supports received* on reproductive intentions were not confirmed. A significant relationship emerged only in 2003 among males when there were at least two external supports; for women, the AME was negative for one support in the same year. In 2009, the relationship was positive, but not significant for both genders. Housing quality (*type of house*), conversely, was positively related to reproductive intentions, but statistical significance was reached only among women living in a luxury house in 2009.

The contextual variables exerted the expected clear and coherent role on fertility intentions. The results outlined a similar association pattern for both genders, with the only exception related to the *changes in GDP*; while always significant for women, it seemed to assume a less important role for men. In 2009, the negative link between *changes in long-term unemployment* lost its statistical significance for both genders, while *changes in unemployment* became significant for men. Finally, *part-time employment incidence* showed a significant negative effect in all the models, indicating that, in Italy, where involuntary part-time work is more widespread than in Europe (Fig. 1d), an increase in the regional spread of this type of work induces a feeling of uncertainty that negatively influences fertility intentions.

The impact exerted by the contextual variables on fertility intentions is complex and can be more easily interpreted by considering both the average effects and the variability of the



**Fig. 3** a, b AME points by gender (Men, Women) and survey (2003, 2009)—Restricted range. Authors' elaboration based on the Italian Multipurpose Survey—Family and Social Subjects data (Istat); only the variables that are significant in at least one model are represented; the grey points represent contextual variables (for the sake of brevity and readability, the word “change” has been omitted from variables labels); parity does not appear here because its AME values (in y and x-axis) are external to the considered range.

effect in the different regions. For example, the mean value of the incidence of part-time employment grows considerably from 2003 to 2009, increasing from approximately 8.7 to 14%. Moreover, the corresponding effect on the probability of a positive fertility intention for men is equivalent to a decrease of  $-0.128$  and  $-0.144$  in 2003 and 2009 respectively. This effect also holds for the other contextual variables, indicating a noticeable and diversified net effect at the regional level.

## 8 Discussion

The data showed the same stable, significant effects on fertility intentions for some variables for both genders both before and after the onset of the economic recession in 2007/2008. In all the models and in line with previous research on Italy (Fiori 2011; Vignoli et al. 2013) and on other European countries (Berrington 2004; Liefbroer 2009), the results confirmed that, during the individual's life, intentions describe age-dependent curves with levels conditional on the parity reached. Having more than one child acts as a strong deterrent for fertility intentions even if, as in many European countries (Sobotka and Beaujouan 2014), the ideal number of children continues to be approximately 2 for Italian men and women of all ages, considerably above the number couples are currently having (Rosina and Testa 2009; Sabbadini 2012; Fiori et al. 2013).

Apart from the similar and decisive effect of age and parity on fertility intentions, other relevant variables assume a different role by gender and in the two surveys as represented in Fig. 3a and b, where each point has the AME values for males (x-axis) and females (y-axis) as coordinates, and therefore the bisector represents a situation where no gender differences emerge. The two circles enclose the significant variables most closely related to each of the two genders in 2009 (the left one to women, the right one to men).

Greater dispersion around the bisector is observed with regard to 2009 than 2003, pointing to increasing gender differentiation. This confirms our hypothesis 2 and agrees with the findings of many other authors (Berrington 2004; Cavalli and Klobas 2013; Vignoli et al. 2013; Spéder and Kapitány 2014). Indeed, the changing position in the male/female-plane of some variables between the two surveys highlights their different gender-based impacts

on fertility intentions before and after the onset of the crisis, confirming the results of Fiori et al. (2013) and Mills and Blossfeld (2005) for Italy. Gender differences—which seemed modest in 2003, since the points are close to the bisector of the first and third quadrants—shifted towards the male axis in 2009, suggesting the emergence of gender-asymmetric decision-making patterns when economic uncertainty increases. Specifically, in 2009 the employment status of the couple and the highest educational level gained importance for men, while the importance of partnership status and housing quality emerged for women.

The continuing view of marriage as a necessary precondition for planning a birth for women is in agreement with the results achieved for Italy by Vignoli et al. (2013) and Modena et al. (2014). Interestingly, it seems that the onset of the crisis may have modified the male approach to the environment for having children. In times of rising uncertainty, marriage is increasingly perceived as a form of protection and security that enables fertility plans for both genders. Indeed, in Italy—as outlined by Vignoli et al. (2016)—marriage, rather than cohabitation, is more compatible with employment and economic certainties. The Italian national institute of statistics (ISTAT) affirms that people leave the parental home mainly when they have found a job and a suitable dwelling (ISTAT 2014).

In 2009, men in dual-earner couples always displayed higher fertility intentions with respect to those in a one-earner couple, confirming other findings for Italy reported by Salvini et al. (2009). As expected (H3), men pay more attention to working conditions but assign more importance to the working conditions of both members of the couple; thus, they seem to be modifying the traditional male breadwinner model towards more egalitarian economic roles within the couple.

If the employment status of the couple may represent, for men, a condition of economic certainty required when planning a child, for women, economic certainty seems to some extent also to be symbolised by other variables, mostly by housing quality—here considered as a proxy of wealth. The results are in agreement with Kulu and Vikat (2007), who found significant variations in fertility levels across housing types in Finland, with the highest fertility level among couples living in single-family houses and the lowest among those residing in apartments.

A common trait in all the models is the positive childbearing plans among respondents who had attained higher education (H4), for men in particular, confirming that in Italy education could lower uncertainty: a better educated person is able to acquire the knowledge to solve problems; thus, these people should be more secure and have higher fertility intentions. Similar findings were reported by Miettinen and Paajanen (2005) for Finnish men and women and Perelli-Harris (2006) for Post-Soviet Russia.

The decreasing effect on fertility intentions of intermediate education among women, as suggested by Mills et al. (2008: 16), “could be related to lack of resources, high expectations of investments in children or need to participate in the labour market, which is difficult to combine with parenthood in Italy. Having a child or fertility aspirations may be a ‘luxury’ in this context”.

During the crisis, the gendered impact of external support assured by family members or friends was harmonised. Before the crisis, men probably viewed external supports as a possible solution to some economic/organisational problems, while women might have perceived them as an indication of weakness that could interfere with fertility intentions. In 2009, the loss of significance of unpaid supports for both women and men was not in line with our expectations (H5) and previous findings for Italy (Dalla Zuanna and Micheli 2004; Pinnelli and Fiori 2008). It could mean that the crisis is perceived as a very difficult obstacle, and the existence of a supportive network is not sufficient to overcome it.

As expected (H6), changes in unemployment and long-term unemployment showed a negative relationship with the dependent variable in all the models, but after the onset of the crisis, the change in the long-term unemployment rate lost its significant impact on fertility intentions, while the change in the unemployment rate became significant. This change may indicate that while in the pre-crisis period long-term unemployment assumed importance as a potentially pathological instability of the labour market, in times of economic insecurity, attention seems to shift to general macro indicators as a gauge of the economic situation. We also recall that media information—which plays an important role in the formation of feelings about socioeconomic conditions—also usually refers to the general dimensions of phenomena.

An increase in aggregate unemployment might generate an overall decline in wage rates, which might be interpreted as an indirect income effect. We find an explanation for the different effects of the rise in unemployment or rise in long-term unemployment in the two time periods in the onset of the crisis. It seems that in 2003, before the rise in the level of insecurity in the Italian job market, only variations in long-term unemployment could affect fertility intentions. When labour market performances are good, even unemployed individuals might still be optimistic about their labour-market situation in the near future (de Lange et al. 2014). Conversely, in economically less advantageous times, the perception of economic insecurity could be reinforced. Therefore in 2009, precisely because of growing uncertainty due to the crisis, which had now become clearly visible, the impact of labour-market uncertainty on fertility behaviour became more immediate and changes in unemployment caused important effects.

Finally, the (negative) importance that the interviewees (in particular males) assign to the regional incidence in part-time work was always clear. At the micro-level part-time work is often considered a way of reducing the incompatibility between work and family life among women (Del Boca 2002) under the assumption of a voluntary choice (Begall and Mills 2011), but in Italy part-time work is often an involuntary choice. This working condition is probably associated with lower household disposable incomes, inducing economic insecurity, and awareness of the crisis.

Overall, the contextual economic indicators seem to affect fertility intentions almost in the same way for both genders, while the crisis has changed the effects of some individual characteristics on fertility intentions in a gendered differentiated way (H1 and H2).

We are aware that many unobserved contextual and individual factors may also influence fertility intentions—e.g., sociocultural factors and religious aspects—but, unfortunately, this information was not always available. Moreover, the economic recession may also have affected partnering behaviour, producing an indirect effect on fertility intentions, but our data do not allow us to analyse this important aspect. Lastly, since the available data do not constitute a panel, we also underline the lack of time-varying variables, which would have allowed us to follow changes in individual fertility intentions in a more appropriate way.

## 9 Conclusion

Our analysis allows us to conclude that the considerable effect of some variables (in particular age and parity) on fertility intentions appears to be the same for the two genders both before and after the onset of the economic recession, while other variables assume a different gendered role in the two surveys.

The deterioration of the labour market—which began a few years before the crisis—was exacerbated by the climate of rising uncertainty (mainly represented by high unemployment levels) after the onset of the crisis and seems to have changed the set of determinants of male and female fertility intentions. Our expectation that short-term fertility intentions are influenced by the economic context, especially in times of recession—as emerged in previous research on European countries (Adsera 2004; Sobotka et al. 2011; Kreyenfeld et al. 2012; Fiori et al. 2013; Modena et al. 2014; Modena and Sabatini 2012; Cazzola et al. 2016)—was clearly confirmed. The feeling of long-term economic insecurity experienced during recessions, and not only current income loss, might be what governs fertility decisions (Adsera 2011). As Andersen and Ozcan (2012) state, large fluctuations in aggregate unemployment rates during recessions might generate very different behavioural responses from the unemployment experienced under stable macroeconomic conditions. Findings showed that, in conditions of rising uncertainty and in a weak institutional setting, as in Italy, men and women appear to be more careful in their childbearing planning.

While—contrary to our expectations—part-time work does not show any impact on fertility intentions, important results relate to the role of working conditions of the couple and education. As illustrated, men pay more attention than women to working conditions, in particular to the employment status of both members of the couple. This effect may be exacerbated, especially in 2009, by the fact that, in Italy, being employed (for at least one member of the couple) represents a prerequisite for living as a couple. It should be remembered that Italian institutional provisions are too weak to reduce the opportunity cost of childbearing. Moreover, after the onset of the crisis the effect of a high level of education clearly emerges as a protective factor on fertility intentions, especially for men.

Findings also suggest implications for public welfare policies aimed at reducing the risks related to decisions to have children, easing the feeling of insecurity regarding the future that strongly affects both fertility intentions and the realisation of positive intentions. For example, the results for women suggest that highly educated women (who have positive intentions) could take advantage of adequate policy measures allowing them to combine family roles and work.

Our results fit into the existing literature on fertility determinants by introducing empirical measures of both individual and contextual characteristics linked to fertility intentions during periods of rising economic uncertainty from a gender perspective. We believe this paper will contribute to the research on fertility intentions and fertility-decision-making by deepening understanding of the determinants of fertility intentions in different socio-economic contexts.

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## Compliance with ethical standards

**Conflict of interest** The authors declare that they have no conflict of interest.

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## Appendix

See Tables 2, 3, 4.

**Table 2** Summary description of the individual variables—Males. *Source:* Italian Multipurpose Survey—Family and Social Subjects data (Istat)

| Variable   | 2003      |         |       | 2009      |         |       |
|--|-----------|---------|-------|-----------|---------|-------|
|  | Frequency | Percent | Yes % | Frequency | Percent | Yes % |
| <i>Dependent variable (Fertility intentions)</i>     |           |         |       |           |         |       |
| Intention to have a(nother) child within three years |           |         |       |           |         |       |
| Yes  | 1463      | 35.8    |       | 1176      | 38.6    |       |
| No   | 2621      | 64.2    |       | 1867      | 61.4    |       |
| <i>Independent variables</i>                         |           |         |       |           |         |       |
| Age  |           |         |       |           |         |       |
| 18–24  | 27        | 0.6     | 55.6  | 20        | 0.6     | 68.4  |
| 25–34  | 1137      | 24.2    | 64.8  | 793       | 27.2    | 67.3  |
| 35 and over (35–45)                                  | 3021      | 75.2    | 24.7  | 2466      | 72.2    | 29.1  |
| Partnership status                                   |           |         |       |           |         |       |
| Married  | 3929      | 93.9    | 34.7  | 2926      | 89.2    | 37.0  |
| Cohabitants (ref. cat.)                              | 256       | 6.1     | 53.2  | 353       | 10.8    | 52.0  |
| Number of living children                            |           |         |       |           |         |       |
| No children (ref. cat.)                              | 787       | 18.8    | 79.7  | 590       | 18.0    | 81.3  |
| One child  | 1300      | 31.1    | 52.3  | 1037      | 31.6    | 56.3  |
| Two children   | 1718      | 41.0    | 9.2   | 1305      | 39.8    | 13.1  |
| Three or more children                               | 380       | 9.1     | 8.7   | 347       | 10.6    | 8.3   |
| Educational level                                    |           |         |       |           |         |       |
| Low (ref. cat.)                                      | 2073      | 49.5    | 32.1  | 1391      | 42.4    | 33.2  |
| Intermediate   | 1727      | 41.3    | 39.0  | 1512      | 46.1    | 41.8  |
| High   | 385       | 9.2     | 41.7  | 376       | 11.5    | 46.2  |
| Employment status of the respondent                  |           |         |       |           |         |       |
| Not working (ref. cat.)                              | 186       | 4.4     | 26.7  | 210       | 6.4     | 42.1  |
| Part-time work                                       | 116       | 2.8     | 32.4  | 136       | 4.2     | 42.5  |
| Full-time work                                       | 3883      | 92.8    | 36.4  | 2933      | 89.4    | 38.2  |
| Employment status of the couple                      |           |         |       |           |         |       |
| No workers (ref. cat.)                               | 166       | 4.0     | 26.1  | 159       | 4.8     | 39.6  |
| One worker   | 1742      | 41.6    | 31.7  | 1418      | 43.3    | 34.0  |
| Two workers  | 2277      | 54.4    | 39.7  | 1702      | 51.9    |       |
| Type of house  |           |         |       |           |         |       |
| Modest (ref. cat.)                                   | 641       | 15.6    | 32.0  | 542       | 16.8    | 36.0  |
| Normal   | 2692      | 65.8    | 37.4  | 2158      | 66.7    | 39.8  |
| Luxury   | 759       | 18.6    | 33.6  | 534       | 16.5    | 36.7  |
| Number of external supports received                 |           |         |       |           |         |       |
| No support (ref. cat.)                               | 3243      | 77.5    | 35.4  | 2361      | 72.0    | 40.3  |
| One support  | 716       | 17.1    | 36.1  | 673       | 20.5    | 32.2  |
| Two or more supports                                 | 226       | 5.4     | 40.2  | 245       | 7.5     | 40.4  |
| N (Individuals)                                      | 4185      |         |       | 3279      |         |       |

The ‘age’ variable is shown divided into classes for descriptive reasons; in the model, it was used as a quantitative variable. Any differences in the total number of responses are due to missing data. Unweighted data

**Table 3** Summary description of the individual variables—Females. *Source:* Italian Multipurpose Survey—Family and Social Subjects data (Istat)

| Variable   | 2003      |         |       | 2009      |         |       |
|--|-----------|---------|-------|-----------|---------|-------|
|  | Frequency | Percent | Yes % | Frequency | Percent | Yes % |
| <i>Dependent variable (Fertility intentions)</i>     |           |         |       |           |         |       |
| Intention to have a(nother) child within three years |           |         |       |           |         |       |
| Yes  | 1502      | 29.1    |       | 1233      | 32.1    |       |
| No   | 3666      | 70.9    |       | 2614      | 67.9    |       |
| <i>Independent variables</i>                         |           |         |       |           |         |       |
| Age  |           |         |       |           |         |       |
| 18–24  | 133       | 2.5     | 69.8  | 102       | 2.4     | 73.9  |
| 25–34  | 1775      | 33.5    | 55.4  | 1271      | 30.6    | 58.5  |
| 35 and over (35–45)                                  | 3393      | 64.0    | 13.6  | 2785      | 67.0    | 18.1  |
| Partnership status                                   |           |         |       |           |         |       |
| Married  | 5001      | 94.3    | 28.0  | 3749      | 90.2    | 30.6  |
| Cohabitant (ref. cat.)                               | 300       | 5.7     | 46.8  | 409       | 9.8     | 45.1  |
| Number of living children                            |           |         |       |           |         |       |
| No children (ref. cat.)                              | 917       | 17.3    | 75.8  | 665       | 16.0    | 77.8  |
| One child  | 1504      | 28.4    | 43.8  | 1264      | 30.4    | 48.4  |
| Two children   | 2269      | 42.8    | 7.1   | 1734      | 41.7    | 9.8   |
| Three or more children                               | 611       | 11.5    | 4.2   | 495       | 11.9    | 5.1   |
| Education level                                      |           |         |       |           |         |       |
| Low (ref. cat.)                                      | 2380      | 44.9    | 21.5  | 1542      | 37.1    | 24.7  |
| Intermediate   | 2369      | 44.7    | 33.5  | 1893      | 45.5    | 33.3  |
| High   | 552       | 10.4    | 42.9  | 723       | 17.4    | 44.2  |
| Employment status of the respondent                  |           |         |       |           |         |       |
| Not working (ref. cat.)                              | 2264      | 42.7    | 25.9  | 1894      | 45.5    | 28.4  |
| Part-time work                                       | 890       | 16.8    | 25.5  | 739       | 17.8    | 27.3  |
| Full-time work                                       | 2147      | 40.5    | 33.9  | 1525      | 36.7    | 38.7  |
| Employment status of the couple                      |           |         |       |           |         |       |
| No workers (ref. cat.)                               | 224       | 4.2     | 20.5  | 221       | 5.3     | 31.6  |
| One worker   | 2261      | 42.7    | 26.1  | 1838      | 44.2    | 28.1  |
| Two workers  | 2816      | 53.1    | 32.1  | 2099      | 50.5    | 35.5  |
| Type of house  |           |         |       |           |         |       |
| Modest (ref. cat.)                                   | 825       | 15.9    | 26.0  | 692       | 16.9    | 29.5  |
| Normal   | 3381      | 65.2    | 30.5  | 2718      | 66.2    | 32.9  |
| Luxury   | 983       | 18.9    | 26.5  | 692       | 16.9    | 31.5  |
| Number of external supports received                 |           |         |       |           |         |       |
| No support (ref. cat.)                               | 4239      | 80.0    | 28.3  | 3116      | 74.9    | 32.2  |
| One support  | 821       | 15.5    | 31.2  | 765       | 18.4    | 29.6  |
| Two or more supports                                 | 241       | 4.5     | 34.6  | 277       | 6.7     | 37.1  |
| N (Individuals)                                      | 5301      |         |       | 4158      |         |       |

The 'age' variable is shown divided into classes for descriptive reasons; in the model, it was used as a quantitative variable. Any differences in the total number of responses are due to missing data. Unweighted data

**Table 4** Summary description of the contextual variables. *Source:* OECD—Istat

| Variables                                  | 2003  |                       | 2009  |                      |
|--|-------|-----------------------|-------|----------------------|
|  | Mean  | SD (range)            | Mean  | SD (range)           |
| Regional level                             |       |                       |       |                      |
| Changes in GDP (%)                         | 5.95  | 3.46 (−9.16 ÷ 13.11)  | −3.18 | 1.47 (−6.49 ÷ −0.82) |
| Changes in unemployment rate (%)           | −3.48 | 9.77 (−13.88 ÷ 15.49) | 33.66 | 20.57 (1.62 ÷ 65.96) |
| Changes in long-term unemployment rate (%) | −9.52 | 12.72 (−38.4 ÷ 27.1)  | −2.44 | 11.10 (−21.9 ÷ 21.3) |
| Part-time employment incidence (%)         | 8.73  | 2.45 (4.0 ÷ 12.7)     | 13.98 | 1.94 (10.0 ÷ 17.0)   |
| N (regions)                                | 19    |                       | 19    |                      |

## References

- Adsera, A. (2004). Changing fertility rates in developed countries. The impact of labor market institutions. *Journal of Population Economics*, 17(1), 17–43. <https://doi.org/10.1177/0968533212465613>.
- Adsera, A. (2011). Where are the babies? Labor market conditions and fertility in Europe. *European Journal of Population*, 27(1), 1–32. <https://doi.org/10.1007/s10680-010-9222-x>.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T).
- Ajzen, I., & Klobas, J. (2013). Fertility intentions: An approach based on the theory of planned behavior. *Demographic Research*, 29(8), 203–232. <https://doi.org/10.4054/DemRes.2013.29.8>.
- Allison, P. D. (1999). Comparing logit and probit coefficients across groups. *Sociological Methods & Research*, 28(2), 186–208. <https://doi.org/10.1177/0049124199028002003>.
- Andersen, S., & Ozcan, B. (2012). The effects of unemployment on fertility. [https://www.ed.lu.se/media/ed/seminar\\_papers/draft\\_november\\_131107.pdf](https://www.ed.lu.se/media/ed/seminar_papers/draft_november_131107.pdf). Retrieved from Jan 2020.
- Andersson, G. (2000). The impact of labour-force participation on childbearing behaviour: Pro-cyclical fertility in Sweden during the 1980s and the 1990s. *European Journal of Population*, 16(4), 293–333. <https://doi.org/10.1023/A:1006454909642>.
- Balbo, N., & Mills, M. (2011). The influence of the family network on the realisation of fertility intentions. *Vienna Yearbook of Population Research*, 9(1), 179–206. <https://doi.org/10.2307/41342810>.
- Beck, U. (1992). *Risk society: Towards a new modernity*. London: Sage Publications. <https://doi.org/10.2307/3341155>.
- Beck, U., & Beck-Gernsheim, E. (2002). *Individualization: Institutionalised individualism and its social and political consequences*. London: Sage Publications. <https://doi.org/10.4135/9781446218693>.
- Becker, G.S. (1960). *An Economic Analysis of Fertility*. *Demographic and Economic Change in Developed Countries*. NBER conference series 11 (pp. 209–231). Princeton.
- Becker, G. S. (1991). *A treatise on the family*. Cambridge: Harvard University Press.
- Begall, K., & Mills, M. (2011). The impact of subjective work control, job strain and work–family conflict on fertility intentions: A European comparison. *European Journal of Population*, 27(4), 433–456. <https://doi.org/10.1007/s10680-011-9244-z>.
- Bernhardt, E. M. (1993). Fertility and employment. *European Sociological Review*, 9(1), 25–42. <https://doi.org/10.1093/oxfordjournals.esr.a036659>.
- Berninger, I., Weiß, B., & Wagner, M. (2011). On the links between employment, partnership quality, and the intention to have a first child: The case of West Germany. *Demographic Research*, 24(24), 579–610. <https://doi.org/10.4054/DemRes.2011.24.24>.
- Berrington, A. (2004). Perpetual postponers? Women’s, men’s and couple’s fertility intentions and subsequent fertility behaviour. *Population trends*, 117, 9–19.
- Berrington, A., & Pattaro, S. (2013). Educational differences in fertility desires, intentions and behaviour: A life course perspective. *Advances in Life Course Research*, 21, 10–27. <https://doi.org/10.1016/j.alcr.2013.12.003>.
- Billari, F., Philipov, D., & Testa, M. R. (2009). Attitudes, norms and perceived behavioural control: Explaining fertility intentions in Bulgaria. *European Journal of Population*, 25(4), 439–465. <https://doi.org/10.1007/s10680-009-9187-9>.
- Billingsley, S., & Ferrarini, T. (2014). Family policy and fertility intentions in 21 European countries. *Journal of Marriage and Family*, 76, 428–445. <https://doi.org/10.1111/jomf.12097>.

- Brewster, K. L., & Rindfuss, R. R. (2000). Fertility and women's employment in industrialized nations. *Annual Review of Sociology*, 26(1), 271–296. <https://doi.org/10.1146/annurev.soc.26.1.271>.
- Broughton, A., Biletta, I., Kullander, M. (2010). *Flexible forms of work: 'Very atypical' contractual arrangements*. European Working Conditions Observatory.
- Buber, I., Panova, R., Dorbritz, J. (2012). *Fertility intentions of highly educated men and women and the rush hour of life* (No. 8/2012). Vienna Institute of Demography Working Papers.
- Bühler, C., & Fraczak, E. (2007). Learning from others and receiving support: The impact of personal networks on fertility intentions in Poland. *European Societies*, 9(3), 359–382. <https://doi.org/10.1080/14616690701314101>.
- Butz, W. P., & Ward, M. P. (1979). The emergence of countercyclical US fertility. *The American Economic Review*, 69(3), 318–328.
- Caltabiano, M., Castiglioni, M., & Rosina, A. (2009). Lowest-low fertility: Signs of a recovery in Italy? *Demographic Research*, 21(23), 681–718. <https://doi.org/10.4054/DemRes2009.21.23>.
- Cameron, A. C., & Miller, D. L. (2015). A practitioner's guide to cluster-robust inference. *Journal of Human Resources*, 50(2), 317–372. <https://doi.org/10.3368/jhr.50.2.317>.
- Cappellari, L., Dell'Aringa, C., & Leonardi, M. (2012). Temporary employment, job flows and productivity: A tale of two reforms. *The Economic Journal*, 122(562), 188–215.
- Carpenter, J., Goldstein, H., & Rasbash, J. (1999). A non-parametric bootstrap for multilevel models. *Multi-level modelling newsletter*, 11(1), 2–5.
- Cavalli, L., & Klobas, J. (2013). How expected life and partner satisfaction affect women's fertility outcomes: the role of uncertainty in intentions. *Population Review*, 52(2), 70–86.
- Cazzola, A., Pasquini, L., & Angeli, A. (2016). The relationship between unemployment and fertility in Italy: A time-series analysis. *Demographic Research*, 34(1), 1–38. <https://doi.org/10.4054/DemRes.2016.34.1>.
- Charles, M. (2011). A world of difference: International trends in women's economic status. *Annual Review of Sociology*, 37, 355–371. <https://doi.org/10.1146/annurev.soc.012809.102548>.
- Coletto, D. (2010). *Effects of economic crisis on Italian economy*. European Foundation of Living and Working Conditions. <https://www.eurofound.europa.eu/eiro/2010/03/articles/it1003019i.htm>.
- D'Addio, A.C., & Mira d'Ercole, M. (2005a). Trends and determinants of fertility rates: The role of policies. In OECD Economic Studies (Ed.), *OECD Social, Employment and Migration Working Papers n. 27*. Paris: OECD.
- D'Addio, A. C., & Mira d'Ercole, M. (2005). *Policies, institutions and fertility rates: A panel data analysis for OECD countries*. Paris: OECD.
- Dalla Zuanna, G., & Micheli, G. A. (Eds.), (2004). *Strong family and low fertility: a paradox? New perspectives in interpreting contemporary family and reproductive behaviour* (Vol. 14). Dordrecht: Kluwer Academic Publishers.
- De Lange, M., Wolbers, M. H., Gesthuizen, M., & Ultee, W. C. (2014). The impact of macro-and micro-economic uncertainty on family formation in the Netherlands. *European Journal of Population*, 30(2), 161–185. <https://doi.org/10.1007/s10680-013-9306-5>.
- De la Rica, S., & Iza, A. (2005). Career planning in Spain: Do fixed-term contracts delay marriage and parenthood? *Review of the Economics of the Household*, 3, 49–73. <https://doi.org/10.1007/s11150-004-0979-8>.
- Del Boca, D. (2002). The effect of child care and part time opportunities on participation and fertility decisions in Italy. *Journal of Population Economics*, 15(3), 549–573. <https://doi.org/10.1007/s001480100089>.
- Del Boca, D., & Giraldo, A. (2013). Why has the growth of female employment in Italy been so slow? *Journal of Modern Italian Studies*, 18(4), 485–499. <https://doi.org/10.1080/1354571X.2013.810806>.
- Del Bono, E., Weber, A., & Winter-Ebmer, R. (2015). Fertility and economic instability: The role of unemployment and job displacement. *Journal of Population Economics*, 28(2), 463–478. <https://doi.org/10.1007/s00148-014-0531-y>.
- Di Quirico, R. (2010). Italy and the global economic crisis. *Bulletin of Italian Politics*, 2(2), 3–19.
- Easterlin, R. A. (1976). The conflict between aspirations and resources. *Population and Development Review*, 2(3/4), 417–425. <https://doi.org/10.2307/1971619>.
- Engelhardt, H., & Prskawetz, A. (2004). On the changing correlation between fertility and female employment over space and time. *European Journal of Population*, 20, 35–62. <https://doi.org/10.1023/B:EUIJP.0000014543.95571.3b>.
- Eurostat (2019). Employment statistics. <https://ec.europa.eu/>.
- Fagnani, J. (2008). The Future of Integrated Family Policy - The Long-term Prospects: 2025/30. In OECD (Ed.), *Scoping Paper, Advisory Unity to the Secretary-General, International Futures Programme*. Paris: OECD.

- Fahlén, S. (2013). Capabilities and childbearing intentions in Europe. *European Societies*, 15(5), 639–662. <https://doi.org/10.1080/14616696.2013.798018>.
- Fahlén, S., & Oláh, L. (2015). The impact of economic uncertainty on childbearing intentions in Europe. In *Families And Societies: Working Paper No. 36*.
- Ferrera, M. (1996). Il modello Sud-Europeo di welfare state. *Italiana di Scienza Politica*, 26(1), 67–101.
- Fine-Davis, M. (2016). *Changing gender roles and attitudes to family formation in Ireland*. Manchester: Manchester University Press.
- Fiori, F. (2011). Do childcare arrangements make the difference? A multilevel approach to the intention of having a second child in Italy. *Population Space and Place*, 17(5), 579–596. <https://doi.org/10.1002/psp.567>.
- Fiori, F., Rinesi, F., Pinnelli, A., & Prati, S. (2013). Economic insecurity and the fertility intentions of Italian women with one child. *Population Research and Policy Review*, 32(3), 373–413. <https://doi.org/10.1007/s11113-013-9266-9>.
- Giddens, A. (1990). *Consequences of modernity*. Cambridge: Polity Press.
- Goldstein, H. (2011). *Multilevel statistical models*. Hoboken, New Jersey: John Wiley & Sons.
- Goldstein, J., Kreyenfeld, M., Jasilioniene, A., & Órsal, D. D. K. (2013). Fertility reactions to the “Great Recession” in Europe: Recent evidence from order-specific data. *Demographic Research*, 29(4), 85–104. <https://doi.org/10.4054/DemRes.2013.2>.
- Hanappi, D., & Buber-Ennser, I. (2017). When paid work matters for fertility intentions and subsequent behavior: Evidence from two waves of the Austrian gender and generation survey. *Comparative Population Studies*. <https://doi.org/10.12765/CPoS-2017-15en>.
- Hanappi, D., Rysler, V., & Bernardi, L. (2016). The role of attitudes towards maternal employment in the relationship between job quality and fertility intentions. *Journal of Research in Gender Studies*, 6(1), 192–219.
- Hanappi, D., Rysler, V. A., Bernardi, L., & Le Goff, J. M. (2017). Changes in employment uncertainty and the fertility intention-realization link: An analysis based on the Swiss household panel. *European Journal of Population*, 33(3), 381–407. <https://doi.org/10.1007/s10680-016-9408-y>.
- Hox, J. J., Moerbeek, M., & Van de Schoot, R. (2017). *Multilevel analysis: Techniques and applications*. New York: Routledge.
- i Arolas, H. P. (2017). A cohort perspective of the effect of unemployment on fertility. *Journal of Population Economics*, 30(4), 1211–1239. <https://doi.org/10.1007/s00148-017-0640-5>.
- ISTAT (2014). *Generazioni a confronto*. Come cambiano i percorsi verso la vita adulta. Roma: Istat.
- ISTAT (2016). *Rapporto annuale 2016. La situazione del paese*. Roma: Istat.
- ISTAT (2017). Istat datawarehouse (<https://dati.istat.it/>). Retrieved from Jan 2020.
- Kotowska, I., Józwiak, J., Matysiak, A., & Baranowska, A. (2008). Poland: Fertility decline as a response to profound societal and labour market changes? *Demographic Research*, 19(22), 795–853. <https://doi.org/10.4054/DemRes.2008.19.22>.
- Kreyenfeld, M., Andersson, G., & Pailhé, A. (2012). Economic uncertainty and family dynamics in Europe. *Introduction to Special Issue of Demographic Research*, 27(28), 835–852. <https://doi.org/10.4054/DemRes.2012.27.28>.
- Kulu, H., & Vikat, A. (2007). Fertility differences by housing type: an effect of housing conditions or of selective moves. *Demographic Research*, 17(26), 775–802. <https://doi.org/10.4054/DemRes.2007.17.26>.
- Liefbroer, A. (2009). Changes in family size intentions across young adulthood: A lifecourse perspective. *European Journal of Population*, 25, 363–386. <https://doi.org/10.1007/s10680-008-9173-7>.
- Miettinen, A., & Paajanen, P. (2005). Yes, no, maybe: Fertility intentions and reasons behind them among childless Finnish men and women. *Yearbook of Population Research in Finland*, 41, 165–184.
- Mills, M., & Blossfeld, H. P. (2005). Globalization, uncertainty and changes in early life courses. In H. P. Blossfeld, M. Mills, E. Klíjizing, & K. Kurz (Eds.), *Globalization, uncertainty, and youth in society* (pp. 1–24). New York: Routledge.
- Mills, M., Mencarini, L., Tanturri, M. L., & Begall, K. (2008). Gender equity and fertility intentions in Italy and the Netherlands. *Demographic Research*, 18(1), 1–26. <https://doi.org/10.4054/DemRes.2008.18.1>.
- Modena, F., Rondinelli, C., & Sabatini, F. (2014). Economic insecurity and fertility intentions: The case of Italy. *Review of Income and Wealth*, 60(S1), 233–255. <https://doi.org/10.1111/roiw.12044>.
- Modena, F., & Sabatini, F. (2012). I would if i could: Precarious employment and childbearing intentions in Italy. *Review of Economics of the Household*, 10, 77–97.

- Mood, C. (2010). Logistic regression: Why we cannot do what we think we can do, and what we can do about it. *European Sociological Review*, 26(1), 67–82. <https://doi.org/10.2307/40602478>.
- Morgan, S. P. (2001). Should fertility intentions inform fertility forecasts? *Proceedings of US Census Bureau Conference: The direction of fertility in the United States* (pp. 153–178). Washington: DC7 US Census Bureau
- Morrissey, T. W. (2017). Child care and parent labor force participation: A review of the research literature. *Review of Economics of the Household*, 15(1), 1–24.
- Mulder, C. H. (2006). Home-ownership and family formation. *Journal of Housing and the Built Environment*, 21, 281–298. <https://doi.org/10.1007/s10901-006-9050-9>.
- Naldini, M. (2003). *The family in the Mediterranean welfare states*. London and New York: Routledge.
- Neyer, G., Lappegård, T., & Vignoli, D. (2013). Gender equality and fertility: Which equality matters? *European Journal of Population*, 29(3), 245–272. <https://doi.org/10.1007/s10680-013-9292-7>.
- OECD (2009). Italy: The Treu (1997) and Biagi (2002) reforms. In *The Political Economy of Reform: Lessons from Pensions, Product Markets and Labour Markets in Ten OECD Countries*. Paris: OECD Publishing. <https://doi.org/https://doi.org/10.1787/9789264073111-12-en>.
- OECD. (2016). *Society at a Glance 2016: OECD social indicators*. Paris: OECD Publishing. <https://doi.org/10.1787/9789264261488>.
- OECD (2017). OECD Database. Paris: OECD [https://stats.oecd.org/Index.aspx?DataSetCode=REGION\\_LABOUR](https://stats.oecd.org/Index.aspx?DataSetCode=REGION_LABOUR). Retrieved from Jan 2020.
- OECD. (2019). *Education at a Glance 2019: OECD Indicators*. Paris: OECD Publishing.
- Pailhé, A., & Solaz, A. (2012). The influence of employment uncertainty on childbearing in France: A tempo or quantum effect? *Demographic Research*, 26, 1–40. <https://doi.org/10.4054/DemRes.2012.26.1>.
- Palumbo, L., & Sironi, E. (2016). *A comparison of the determinants of childbearing intentions before and after the beginning of the economic crisis in Europe*. Paper presented at the 3rd International ESS Conference, Lousanne. <https://www.europeansocialsurvey.org>. Retrieved from 13–15 Jul 2016
- Perelli-Harris, B. (2006). The influence of informal work and subjective well-being on childbearing in post-Soviet Russia. *Population and Development Review*, 32(4), 729–753. <https://doi.org/10.1111/j.1728-4457.2006.00148.x>.
- Philipov, D. (2011). Theories on fertility intentions: A demographer's perspective. *Vienna Yearbook of Population Research*, 9, 37–45. <https://doi.org/10.2307/41342801>.
- Philipov, D., Liefbroer, A. C., & Klobas, J. E. (Eds.). (2015). *Reproductive decision-making in a macro-micro perspectives*. Dordrecht: Springer. [https://doi.org/10.1007/978-94-017-9401-5\\_1](https://doi.org/10.1007/978-94-017-9401-5_1).
- Philipov, D., Spéder, Z., & Billari, F. C. (2006). Soon, later, or ever? The impact of anomie and social capital on fertility intentions in Bulgaria (2002) and Hungary (2001). *Population Studies*, 60(2), 289–308. <https://doi.org/10.1080/00324720600896080>.
- Pinnelli, A., & Fiori, F. (2008). The influence of partner involvement in fatherhood and domestic tasks on mothers' fertility expectations in Italy. *Fathering: A Journal of Theory, Research, and Practice about Men as Fathers*, 6(2), 169–191. <https://doi.org/10.3149/ftth.0602.169>.
- Pinnelli, A., Racioppi, F., & Rettaroli, R. (Eds.). (2007). *Genders in the life course: Demographic issues (Vol. 19)*. Dordrecht: Springer.
- Régnier-Loilier, A., & Vignoli, D. (2011). Fertility intentions and obstacles to their realization in France and Italy. *Population*, 66(2), 361–390. <https://doi.org/10.3917/pope.1102.0361>.
- Rijken, A. J., & Knijn, T. (2009). Couples' decisions to have a first child: Comparing pathways to early and late parenthood. *Demographic Research*, 21, 765–802. <https://doi.org/10.4054/DemRes.2009.21.26>.
- Rinesi, F., Pinnelli, A., Prati, S., Castagnaro, C., & Iaccarino, C. (2011). The transition to second child in Italy: Expectations and realization. *Population*, 66(2), 391–405. <https://doi.org/10.3917/pope.1102.0391>.
- Rosina, A., & Testa, M. R. (2009). Couples' first child intentions and disagreement: An analysis of the Italian case. *European Journal of Population*, 25(4), 487–502. <https://doi.org/10.1007/s10680-009-9188-8>.
- Sabbadini, L. L. (2012). Social and demographic change in Italy. In F. Maggino & G. Nuvolati (Eds.), *Quality of Life in Italy. Research and reflections* (pp. 107–114). Dordrecht: Springer.
- Salvini, S., Pasqual, S., & Vignoli, D. (2009). *Strategie lavorative e intenzioni riproduttive di uomini e donne in coppia: uno sguardo alla situazione italiana*, Università degli studi di Firenze, Dipartimento di Statistica "Giuseppe Parenti", WP 2009/08, p. 35.
- Schindler, M. (2009). The Italian labor market: recent trends, institutions and reform options. *International Monetary Fund, Working Paper* n. 47.

- Sobotka, T., & Beaujouan, É. (2014). Two Is best? The persistence of a two-child family ideal in Europe. *Population and Development Review*, 40(3), 391–419. <https://doi.org/10.1111/1/j.1728-4457.2014.00691.x>.
- Sobotka, T., Skirbekk, V., & Philipov, D. (2011). Economic recession and fertility in the developed world. A literature review. *Population and Development Review*, 37(2), 267–306. <https://doi.org/10.1111/1/j.1728-4457.2011.00411.x>.
- Soroka, S. N. (2014). *Negativity in democratic politics*. New York: Cambridge University Press. <https://doi.org/10.1017/CBO9781107477971>.
- Spéder, Z., & Kapitány, B. (2009). How are time-dependent childbearing intentions realized? Realization, postponement, abandonment, bringing forward. *European Journal of Population*, 25(4), 503–523. <https://doi.org/10.1007/s10680-009-9189-7>.
- Spéder, Z., & Kapitány, B. (2014). Influence on the link between fertility intentions and behavioural outcomes. In D. Philipov, A. C. Liefbroer, & J. E. Klobas (Eds.), *Reproductive decision-making in a macro-micro perspective* (pp. 79–112). Dordrecht: Springer.
- Testa, M. R. (2010). Childnumber and childtiming intentions in a micromacro European framework. In M. R. Testa (Ed.), *European demographic research paper*. Vienna Institute of Demography Austrian Academy of Sciences: Austria.
- Testa, M. R. (2014). On the positive correlation between education and fertility intentions in Europe: Individual-and country-level evidence. *Advance in Life Course Research*, 21, 28–42. <https://doi.org/10.1016/j.alcr.2014.01.005>.
- Testa, M. R., & Basten, S. (2014). Certainty of meeting fertility intentions declines in Europe during the ‘Great Recession.’ *Demographic Research*, 31(23), 687–734. <https://doi.org/10.4054/DemRes.2014.31.23>.
- Testa, M. R., & Stephany, F. (2017). the educational gradient of fertility intentions: A meta-analysis of European studies. *Vienna Yearbook of Population Research*, 15, 293–330. <https://doi.org/10.1553/populationyearbook2017s293>.
- Thomson, E. (1997). Couple childbearing desires, intentions, and births. *Demography*, 34(3), 343–354. <https://doi.org/10.2307/3038288>.
- Thomson, E., & Brandreth, Y. (1995). Measuring fertility demand. *Demography*, 32(1), 81–96. <https://doi.org/10.2307/2061898>.
- Toulemon, L., & Testa, M. R. (2005). Fertility intentions and actual fertility: A complex relationship. *Population & Societies*, 415(4), 1–4.
- UNDESA, united nations department of economic and social affairs (2008). *World economic and social survey 2008. Overcoming economic insecurity*. <https://www.un.org/en/development/desa/news/policy/wess-2008.shtml>
- Vignoli, D., Rinesi, F., & Mussino, E. (2013). A home to plan the first child? Fertility intentions and housing conditions in Italy. *Population Space Place*, 19(1), 60–71. <https://doi.org/10.1002/psp.1716>.
- Vignoli, D., Tocchioni, V., & Salvini, S. (2016). Uncertain lives: Insights into the role of job precariousness in union formation in Italy. *Demographic Research*, 35(10), 253–282. <https://doi.org/10.4054/DemRes.2016.35.10>.

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